

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Total Maximum Daily Load Information Sheet

North Fork Spring River and Dry Fork

Water Body ID: 3186, 3188 and 3189

Water Body Segment at a Glance:

Counties: Dade, Barton and Jasper

Nearby City: Lamar

Length:

N. Fk. Spring River-3186: 17.4 miles

N. Fk. Spring River-3188: 55.9 miles

Dry Fork-3189: 10.2 miles

Pollutant 1 (all streams): *E. coli* bacteria

Source 1 (all streams): Rural nonpoint sources

Pollutant 2 (3188 only): Ammonia

Source 2 (3188 only): Lamar wastewater treatment plant

Pollutant 3 (3188 only): Low dissolved oxygen

Source 3 (3188 only): Unknown



Scheduled for TMDL development:

TMDL development schedules are subject to change.

The most current schedule for TMDL development is available on the department's website at

dnr.mo.gov/env/wpp/tmdl/wpc-tmdl-progress.htm

Description of the Problem

A water body is considered impaired when it fails to meet applicable water quality standards. Water quality standards consist of designated uses, water quality criteria, an antidegradation policy and implementation procedures. The North Fork Spring River is impaired due to exceedances of water quality criteria for the protection of aquatic life and recreational uses, and Dry Fork is impaired due to exceedances of criteria for the protection of recreational uses.

Designated uses of North Fork Spring River and Dry Fork*

- Warm Water Habitat (WWH)
- Whole Body Contact Recreation Category A (WBC-A) ←Dry Fork only
- Whole Body Contact Recreation Category B (WBC-B) ← N. Fk. Spring R. only
- Secondary Contact Recreation (SCR)
- Human Health Protection (HHP)
- Irrigation (IRR)
- Livestock and Wildlife Protection (LWP)

*In addition to these specific uses, all waters of the state are protected by the general water quality criteria that are specified in the state's Water Quality Standards at 10 CSR 20-7.031(4).

Uses that are impaired

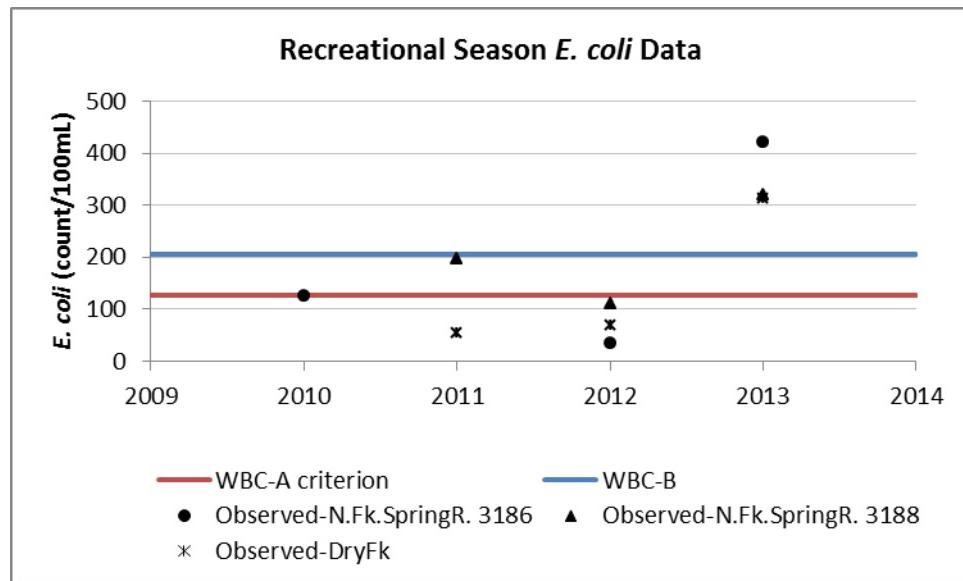
- Warm Water Habitat by low dissolved oxygen and ammonia
- Whole Body Contact Recreation Categories A and B by *E. coli* bacteria

Criteria that apply

- Missouri's water quality standards at 10 CSR 20-7.031(5)(C) and Table A state that the *E.coli* bacteria count shall not exceed 126 per 100 milliliters of water for Category A waters and 206100 mL for Category B waters. This count is the geometric mean during the recreational season (April 1- October 31).
- In Table A of the Water Quality Standards, the criteria for dissolved oxygen in streams designated as warm water habitat is a minimum of 5 mg/L.
- Criteria for ammonia vary with water temperature and pH and are provided in Table B3 of the Water Quality Standards at 10 CSR 20-7.031. At typical temperatures and pH values, a summer ammonia criterion would be 1.5 mg/L with a winter criterion of 3.1 mg/L.

Bacteria impairments

High counts of *E. coli* bacteria in surface water are an indication of fecal contamination. *E. coli*, are bacteria found in the intestines of warm blooded animals and are used as indicators of the risk of waterborne disease from pathogenic bacteria or viruses. A water is judged as impaired by *E. coli* when the criteria are exceeded in any of the last three years for which there is a minimum of five samples collected during the recreational season.



Dissolved Oxygen

For dissolved oxygen, if more than 10 percent of measurements in a water body fail to meet the water quality criteria, then that water body is judged to be impaired. In the case of North Fork Spring River, 1192 of 1415 samples, or 84.2 percent, did not meet the dissolved oxygen water quality criterion.

Dissolved Oxygen Data for North Fork Spring River

Location	Date Start	Date End	Number of Samples	Number <5 mg/L	Percent <5
	2003	2007	15	1	6.7%
	8/28/2006	8/31/2006	303	298	98.3%
	7/31/2006	8/4/2006	382	291	76.2%
	2003	2007	40	26	65%
	8/7/2006	8/10/2006	332	330	99.4%
	2003	2007	11	3	27.3%
	8/7/2006	8/10/2006	332	243	73.2%
			1,415	1,192	84.2%

Ammonia

Ammonia is a common by-product of wastewater treatment and, under certain conditions, can be toxic to aquatic life. A water body is judged to be impaired if the chronic or acute numeric criteria are exceeded on more than one occasion during the last three years for which data is available. In the North Fork Spring River, there were two exceedances of the acute (one hour exposure) criterion on two consecutive days in 2005. More recent data shows ammonia levels are now meeting the acute criterion, but there is inadequate data to determine if chronic levels are met.

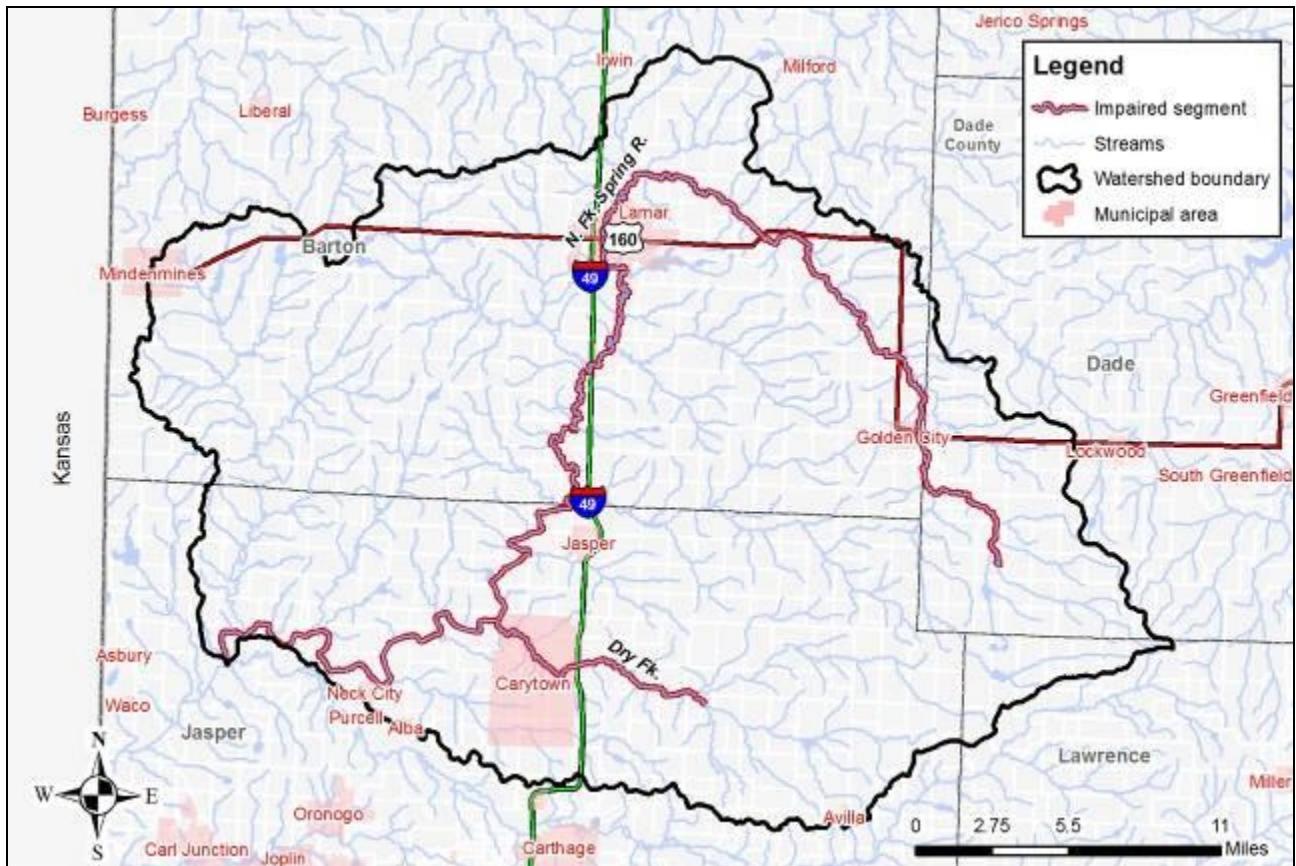
Ammonia as Nitrogen (NH_3N) Data for North Fork Spring River Exceedances highlighted

Site Number	Sample Date	Temp (°C)	pH	NH_3N (mg/L)
19	9/22/2003	19	8	3.56
12	7/27/2005	23.5	8	9.34
12	7/27/2005	25.7	8	8.15
12	7/28/2005	22.9	7	8.71
12	7/28/2005	27.4	9	7.82
10	8/30/2004	24	7	4.22
8	9/27/2006	18	8	2.91

TMDLs for the North Fork Spring River and Dry Fork

The TMDLs for North Fork Spring River and Dry Fork will calculate the maximum amount of each listed pollutant that the stream can receive and still meet water quality standards. The TMDL will also identify all potential or suspected pollutant sources in the watershed and distribute the allowable pollutant loads among those various sources. When developed, these TMDLs will use the most current and available data. For this reason, the final TMDL may present information that differs from that contained in this information sheet.

Map of the North Fork Spring River watershed



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